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Towards a new digital platform model for information systems integration in the German healthcare industry

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Agenda

- Healthcare system fundamentals
- Implications of digitalisation in healthcare
- Derivation of the research problem
- Methodological outline
- The present use case for the research project
- Discussion and next steps

Healthcare system fundamentals

- **In a narrow sense**: Implementation of agreements and organisational structures, by which health services for patients are provided, organised, financed and managed
- **In a broad sense**: Every organisational acting to tackle diseases, disabilities and other health-related risks
- The focus is on the delivery of patient-centred services, especially with regard to **(1)** inpatient and **(2)** outpatient medical care, as well as **(3)** integrated medical care

→ Apart from curative activities as the “core business”, a healthcare system also comprises other fields of activities, like, e.g., health protection, health promotion and cross-sectional management and support processes

[Myers, 1986; Schwartz & Busse, 2012; Busse & Schreyögg, 2013]

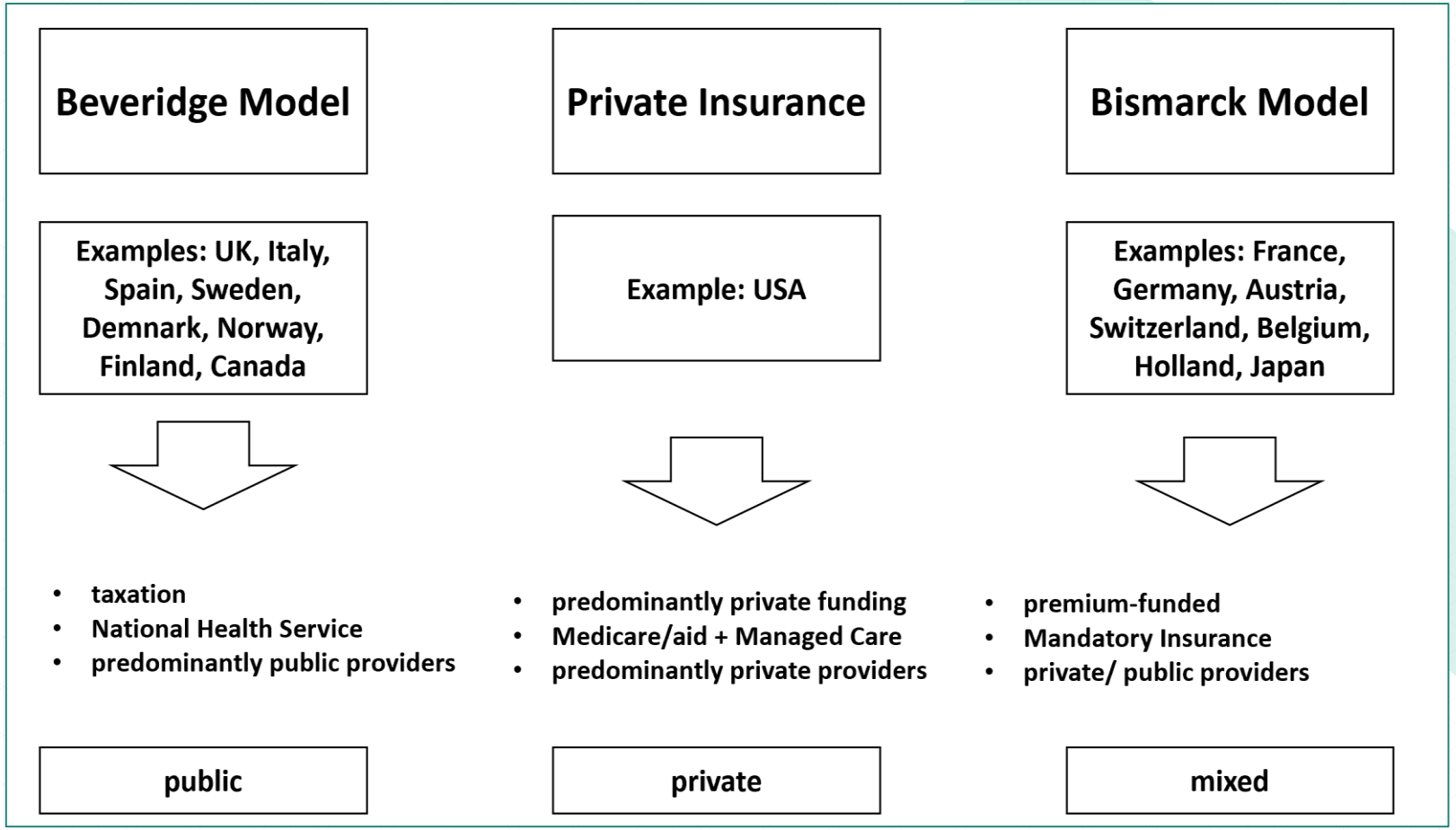
Healthcare system fundamentals (2)

- The nature and the structure of every healthcare system depend on the ethical characteristics, formal and informal structures in a certain society
- By this, such a system depends on three groups of stakeholder groups:
  - **The state** with its institutions and respective governmental mechanisms,
  - **Health service providers** and,
  - **The population of the state**, that use health services and therefore interact with service providers.

[Lameire, Joffe & Wiedemann, 1999; Saltman & Busse, 2002; Busse & Blümel, 2014]

Types of healthcare systems

[Lameire, Joffe & Wiedemann, 1999]

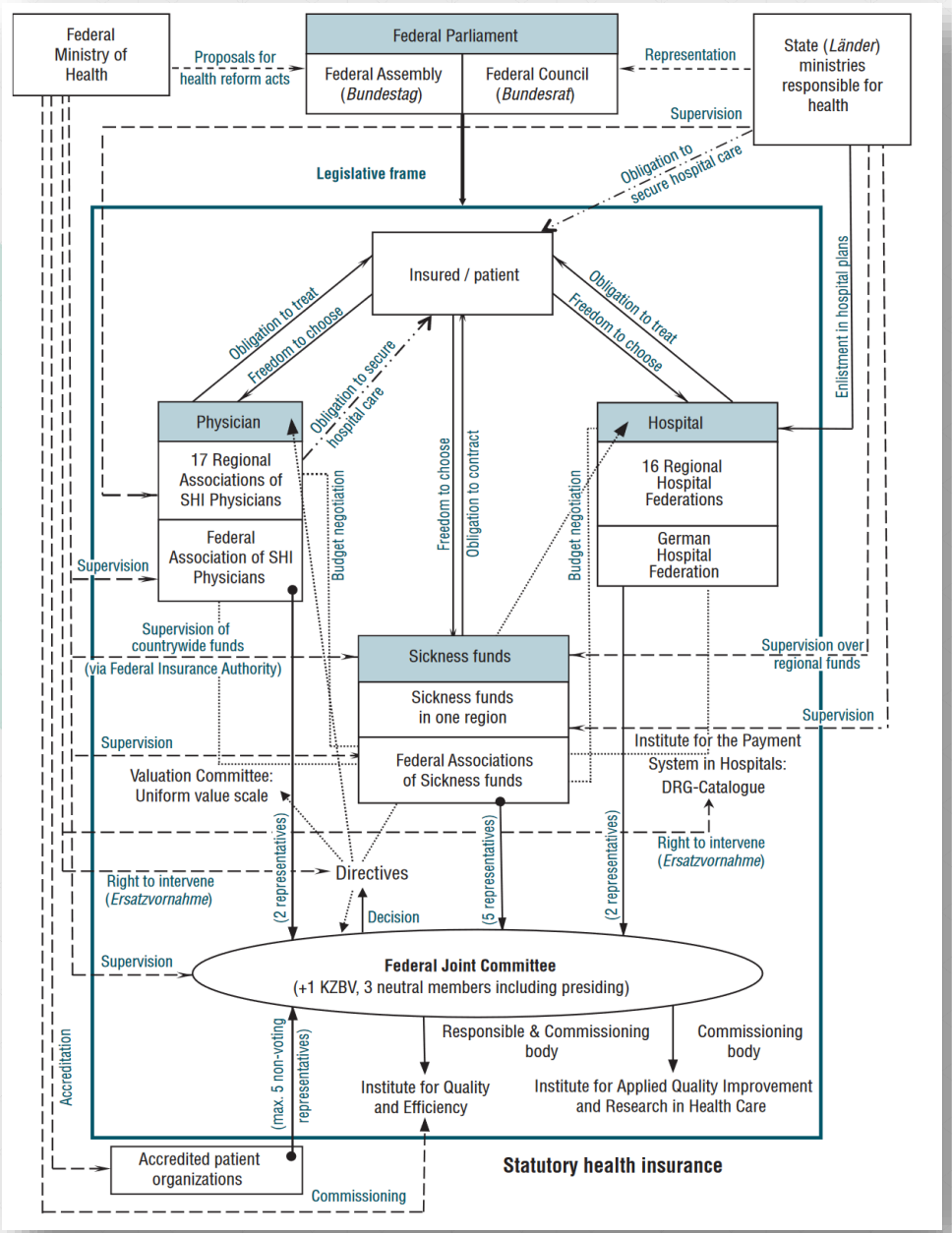


Ideal types, typically implemented as hybrid forms

The German healthcare system

- Based on the Bismarck model
- Actors are assigned to one of three layers:
  - **Macro level**
  - **Meso level**
  - **Micro level**

- Distinctive feature: **corporatist self-governance**



[Busse & Blümel, 2014, p. 18]

Implications of Digitalisation in healthcare

- By using new technologies, existing branches like healthcare will turn into new, digitalised ecosystems
- **Implications for participating actors (except):**

[Valentine & Stewart, 2015; Brynolfsson & Kahin, 2000; Rouse, 2017; Pagani & Pardo, 2017; Arthur, 2011; Iansiti & Levien, 2004, p. 148]

Platform ecosystems as a technical realisation

- Digital platforms work as a central **information mediator** to enable and support the exchange of information, products and services
- By integrating single actors and enterprise networks through platforms, value creation is promoted
  - The more actors a digital platform ecosystem has, the higher value creation of the platform is, as an increasingly bigger network provides more possibilities for developing innovations

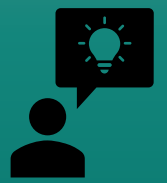
The implementation of platform-based ecosystems contributes to value creation across industries and beyond

[Iansiti & Levien, 2004; Bouwman, Haaker & De Vos, 2008; Gawer & Cusumano, 2014; Pierce, 2009; Jacobides, Genmano & Gawer, 2018]

Identification of the research gap

- The German healthcare system is a regulated market with a mix of public and private service providers, cross-sectional functions and a moderate level of patient sovereignty
- In contrast to more centralised systems, it is structured in a federal, decentralised way with different actors on a municipal, regional and national level, as well as different roles and responsibilities

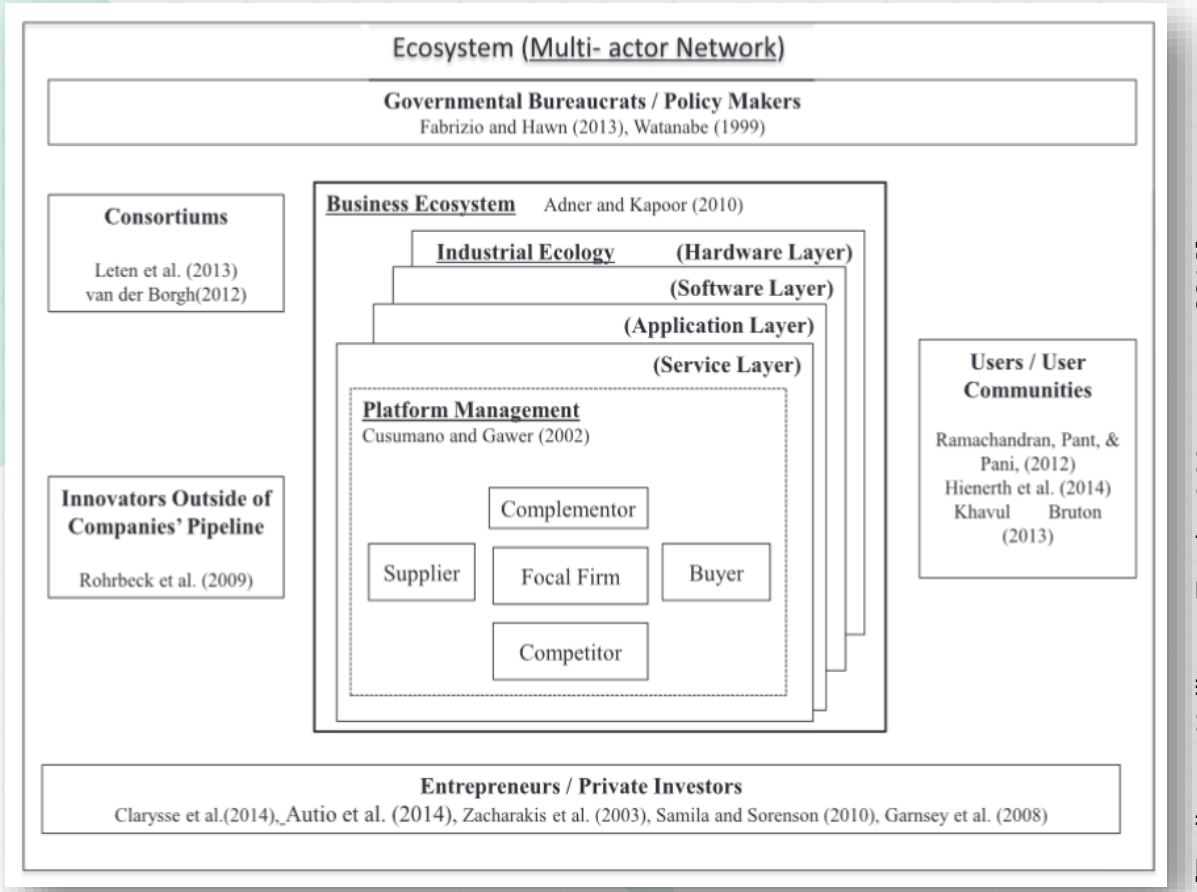
How can overarching interoperability be promoted and enabled, based on harmonised interfaces and common processes and structures?



Identification of the research gap (2)

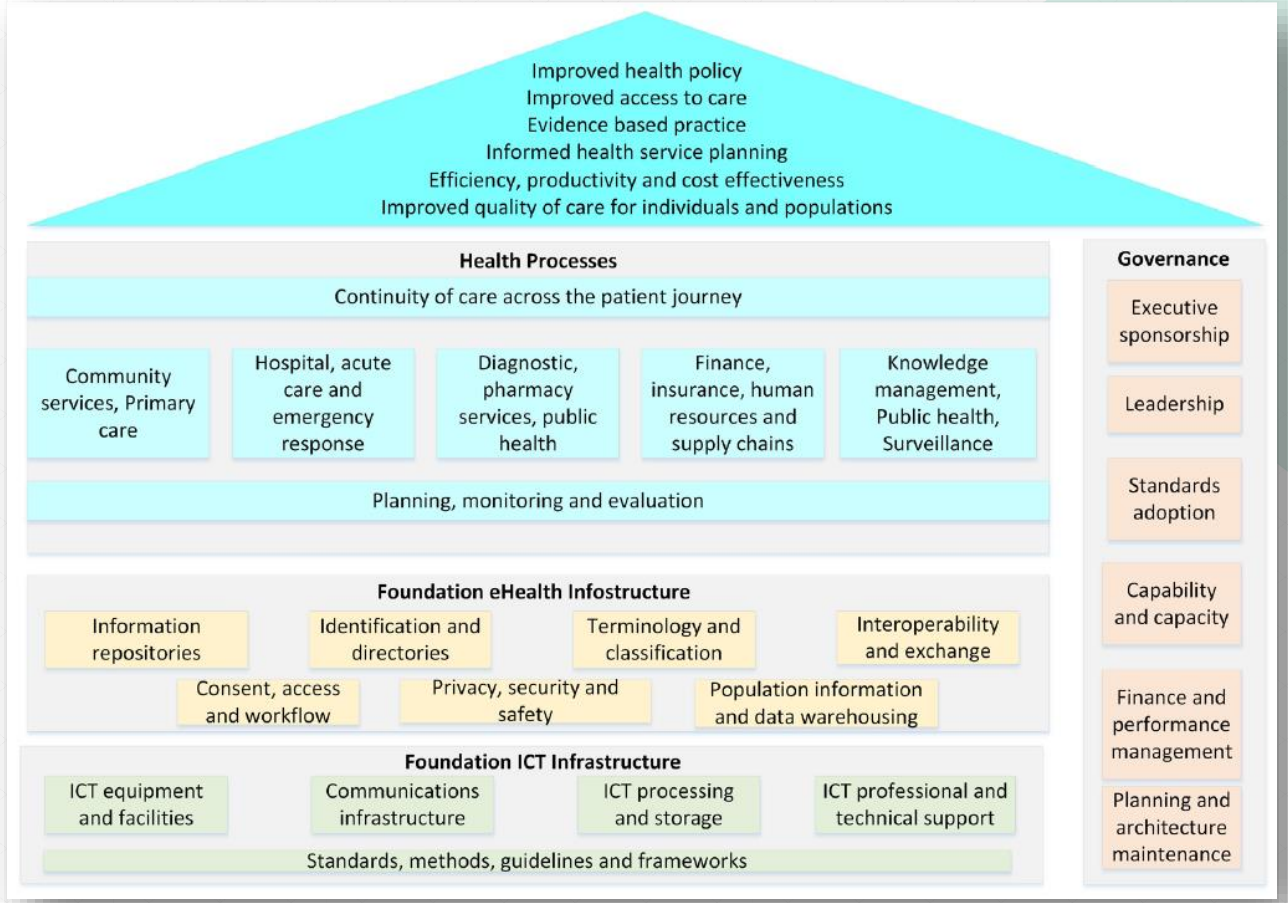
- Recent contributions put emphasis on profit-oriented, private-sector enterprises

Only little knowledge exists about platform ecosystems and the particularities of the healthcare sector and its field of tension



[Tsujimoto, Kajikawa, Tomita & Matsumoto, 2018]

Identification of the research gap (3)



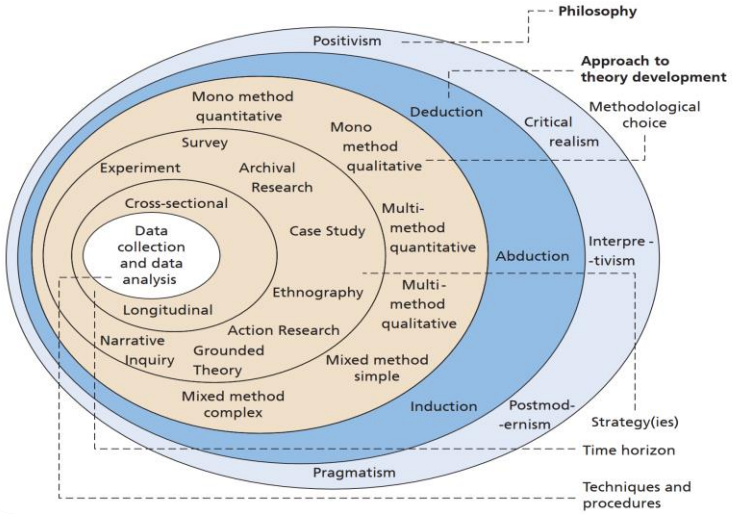
[Taylor, Morris, & Tieman et al., 2015]

Example: eHealth Architecture model (ISO TR 14639: 2014)

- Defines a collection of typical building blocks for digital health
- Does not provide further information on interdependencies between these building blocks and the underlying business logic

How to address the research gap?

Methodological outline



[Saunders et al., 2019]

Constructivist paradigm

Primarily inductive approach to theory development

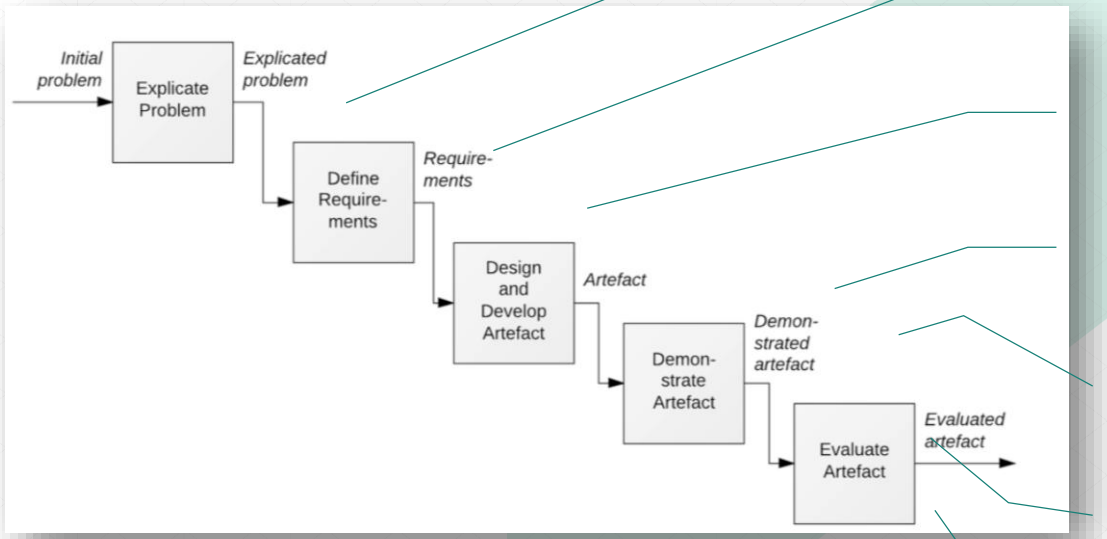
Exploratory mixed methods design

Case study strategy

Cross-sectional time horizon

Design Science Research for Information Systems (Hevner et al., 2004)

Methodological outline (2)

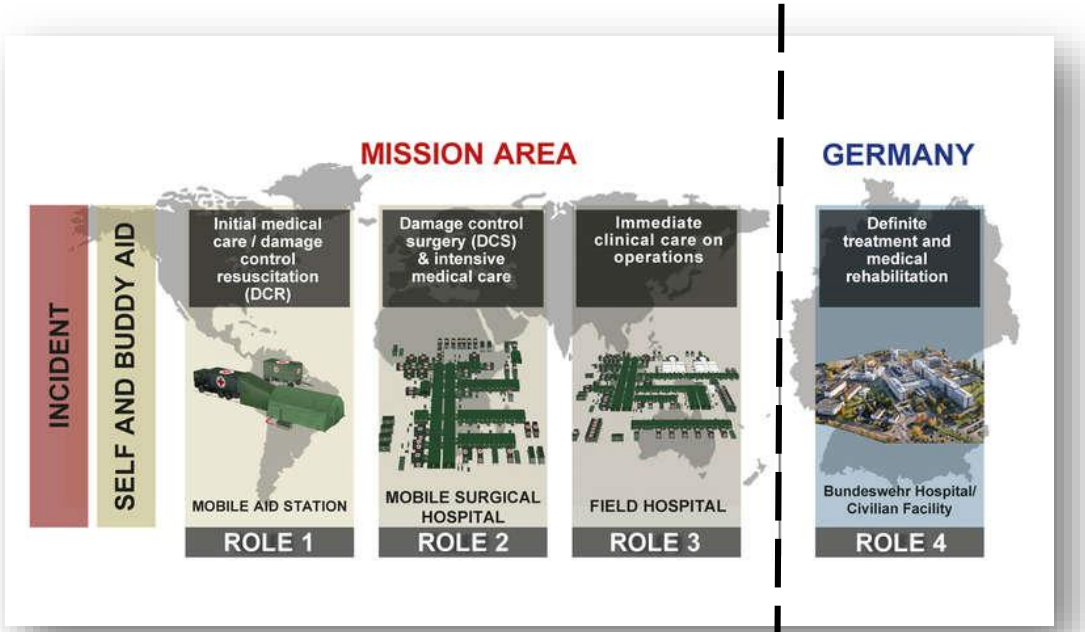


[Johannesson & Perjons, 2021, p 79]

- Identification of existing requirements
- Complement these requirements via semi-structured interviews
- Design a model based on the elaborated body of knowledge
- Present a first iteration of the model
- Conduct a quantitative survey to validate the model's characteristics
- Revise the model based on the survey
- Provide a second, revised iteration of the model
- Discuss the results and the way ahead

The present use case: Bundeswehr Medical Service

Patient care



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- Management and administration
- Health protection and health promotion
- Professional training
- Research and development
- Further cross-sectional functions

Civil health care

Discussion and next steps

- This research project aims to design and to validate a new digital platform model for information systems integration in the German health care system
- It aims to provide a comprehensive insight through using a model-based approach, to determine how IS can be integrated into different sectors within the health care system
- In order to create such an artefact, the concept of Design Science Research for information systems is utilised
- <u>Further steps:</u>
  - Identify key concepts to create the outline for conducting semi-structured interviews
  - Choose a suitable, model-based methodology to design the result artefact

Thank you!

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